

REMARKS

Claims 1-24 are pending. Claims 1-24 stand rejected under 35 USC §§ 102(a), 102(e), and 103(a). Applicant requests that claims 1-17 be cancelled and that claims 25-41 be added. Applicant respectfully traverses the rejections with respect to the remaining claims 18-24 in light of the amendments and the new claims 25-41 with the following remarks.

Drawing Amendments

Attached are replacement drawings for Figs. 1 and 2. Applicant requests entry of the amendments to clarify relationships between components that are described in the specification. The amendments do not add new matter.

Two amendments are made to Fig. 1. One amendment adds a box labeled “Forwarding Logic” encompassing routing table 112. One explicit example of support for this is the last sentence of paragraph 44, which states “... forwarding logic such as a routing table”

The second amendment to Fig. 1 outlines links for transmission of data 107 from processor card 105 to processor card 170 with dashed boxes. The dashed boxes are labelled “LINKS”. In addition to Fig. 2, the following quotes support the demarcation of the links. In particular, the first sentence of paragraph 4 states that “[d]evices such as routers typically access a network identification (NETID) for the data transmission to determine the destination and calculate the route to the destination through intermediate links based upon a routing protocol and a routing table that includes information about the communication system’s topology.” The first sentence of paragraph 22 states that “[r]outer 110 may determine links through which the data 107 will be transmitted and adjust the operation of link circuits of the links to correlate power consumption by the links with characteristics of the data transmission.” The first sentence of paragraph 25 states that “[b]ased upon the availability of links and the routing information, global link control 116 may determine that ports 120, 130, 150, and 160 will transmit data 107 from processor card 105 to processor card 170.” And the first sentence of paragraph 25 states that, “[f]or instance, global link control 116 may determine a rate at which processor card 105 can transmit data 107 as well as the limitations on data frequency, or bandwidth, throughout the links between processor card 105 and processor card 170.”

Two amendments are made to Fig. 2. The first amendment adds a box around the transmitter 220 that is labeled “PORT” and a box around the receiver 250 labeled “PORT”. The first sentence of paragraph 29 supports this amendment, stating that “[p]orts such as read ports 120 and 150, and write ports 130 and 160 may include receivers and transmitters designed to respond to control signals from global link control 116 by configuring and/or re-configuring link circuits based upon the power mode indicated by the control signals.”

The second amendment of Fig. 2 adds a box labeled “LINK CIRCUITS” around serializations circuit 224, pre-emphasis circuit 226, and driver 228, and around receiver 254, gain and equalization circuit 256, and CDR loop 258. The second sentence of paragraph 44 supports this amendment stating that “[t]he global controller may determine activity assignments for each link and the activity assignments may be communicated to the local controller of the link in the form of one or more power modes or one or more settings that are indicative of power modes for link circuits such as circuits for pre-emphasis, amplification, equalization, and CDR.”

Thus, Applicant respectfully requests that the replacement drawings be entered. If the examiner wishes to discuss the support for these amendments in more detail, please call the undersigned, Jeffrey Schubert at (512) 288-6635.

Specification Objections

The objection for the claim numbering is addressed in the claim amendments section. Thus, Applicants respectfully request that the amendments be entered and the objections be withdrawn.

Claim rejections under 35 USC § 102(e)

Claims 1, 3, 6, and 10 stand rejected under 35 USC § 102(e) as being anticipated by Mills U.S. Pat. 6,795,450 (hereinafter “Mills”). While claims 1, 3, 6, and 10 are cancelled, Applicant respectfully traverses the rejections with respect to new claims 25-35 with the following remarks.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference.¹ Furthermore, the identical invention must be shown in as complete detail as is contained in the claim.²

¹ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

Mills does not describe, expressly or inherently, all of the limitations of claim 25.

New independent claim 25 states:

An apparatus to process a data transmission between a first device and a second device via an intermediate link, the apparatus comprising:

a first port comprising a first link circuit to couple to the first device to process the data transmission for the first device and a first local link control responsive to a control signal received by the apparatus from a global link control to configure the first link circuit to operate in a first power mode of multiple power modes associated with the first link circuit based upon the control signal, wherein the control signal is associated with at least one characteristic of the data transmission and the first power mode is associated with the at least one characteristic; and

a second port comprising a second link circuit to couple to the second device to process the data transmission for the second device and a second local link control responsive to the control signal from the global link control to configure the second link circuit to operate in a second power mode of multiple power modes associated with the second link circuit, wherein the second power mode is associated with the at least one characteristic.

The Office action states:

Regarding claims 1, Mills discloses a variable power link, comprising: a link circuit (212,214) to process data having multiple different data transmission characteristics, the link circuit being configurable to operate in multiple power modes (full power mode and low power mode), wherein at least two of the multiple power modes are associated with respective data transmission characteristics (see Fig. 8 and col. 9, lines 55 - col. 10, line 58); and a local controller (801,802) to receive activity assignments for the variable power link, wherein the activity assignments are related to data transmission characteristics, and to configure the link circuit to operate in one of the multiple power modes in respective response to a received activity assignment (see Fig. 8 and col. 9, lines 55 - col. 10, line 58).

As cited in the Office action, Mills describes “a network having a full-power operational mode for supporting full high-bandwidth communication, and a low power ‘link-suspend’ operational mode for temporary operation when only limited communication is occurring....”³ Furthermore, Mills describes entry into the ‘link-suspend’ mode by negotiation with a remote

² Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

³ Mills, col 9, lines 62-66.

link partner⁴ and recognition that a remote link partner has entered into a ‘link-suspend’ mode.⁵

However, Mills does not teach or describe the following limitations of claim 25:

An... apparatus comprising ...a first port comprising a first link circuit to couple to the first device ... and a first local link control responsive to a control signal received by the apparatus from a global link control to configure the first link circuit.; and a second port comprising a second link circuit to couple to the second device ...and a second local link control responsive to the control signal from the global link control to configure the second link circuit....

Thus, Applicant respectfully requests that claim 25 be allowed. Furthermore, as dependents of claim 25, claims 26-35 incorporate the limitations of claim 25. Thus, Mills does not teach all the limitations of dependent claims 26-35 and Applicant respectfully argues that claims 26-35 should be allowed.

Claim rejections under 35 USC § 102(a)

Claims 1-4, 10, 12-14, and 16 stand rejected under 35 USC § 102(a) as being anticipated by Fung U.S. Pat. App. 2003/0196126 (hereinafter “Fung”). While claims 1-17 are cancelled, Applicant respectfully traverses the rejections with respect to new claims 25-41 with the following remarks. Fung does not describe, expressly or inherently, all of the limitations of new independent claims 25 and 36.

The Office action states:

Regarding claim 1, Fung discloses a variable power link, comprising:
a link circuit to process data having multiple different data transmission characteristics, the link circuit being configurable to operate in multiple power modes 1, wherein at least two of the multiple power modes are associated with respective data transmission characteristics (see Figs. 9-10 and [0099]); and
a local controller to receive activity assignments for the variable power link, wherein the activity assignments are related to data transmission characteristics, and to configure the link circuit to operate in one of the multiple power modes in respective response to a received activity assignment (see Figs. 9-10 and [0097]-[0099], see also [0195]-[0197]).

As cited in the Office action, Fung describes “a Model-to-Mode2 and Mode2-to-Model power management scheme [for a CPU], where Model and Mode2 are active modes....”⁶ And

⁴ Mills, col 10, lines 11-17.

⁵ Mills, col 10, lines 28-37.

“Mode3” is an inactive mode for the CPU, “... desirably controlled globally in a multi-CPU system.”⁷ However, Fung does not teach or describe the following limitations of claim 25:

An apparatus to process a data transmission between a first device and a second device via an intermediate link, the apparatus comprising:

a first port comprising a first link circuit to couple to the first device to process the data transmission for the first device and a first local link control responsive to a control signal received by the apparatus from a global link control to configure the first link circuit...; and

a second port comprising a second link circuit to couple to the second device to process the data transmission for the second device and a second local link control responsive to the control signal ... to configure the second link circuit....

Thus, Applicant respectfully requests that claim 25 be allowed. Furthermore, as dependents of claim 25, claims 26-35 incorporate the limitations of claim 25. Thus, Mills does not teach all the limitations of dependent claims 26-35 and Applicant respectfully argues that claims 26-35 should be allowed.

With regards to claim 36, Fung does not describe, expressly or inherently, all of the limitations of claim 36.

New independent claim 36 states:

An apparatus, comprising:

forwarding logic to associate ports with multiple links between an origin and a destination for a data transmission to transmit the data transmission via the links to the destination; and

a global link control coupled with the forwarding logic to transmit a control signal to the ports, the control signal being indicative of at least one characteristic of the data transmission, to configure link circuits of the ports based upon the at least one characteristic via local link controls of the ports.

The Office action states:

Regarding claim 12, the claim is interpreted and rejected for the same reason as set forth in claim 2 above.

Regarding claim 2, Fung would disclose a global controller to determine the activity assignment for the variable power link based upon a routing table, the activity assignment being related to a transmission frequency for the data transmission (see [0086] and [0156]).

⁶ Fung, pp. 10-11, par. 99,

⁷ Fung, pp. 10-11, par. 99,

As cited in the Office action, Fung describes balancing tasks distributed to servers based upon the loads on the servers and based upon which servers are active:

A load balancer...[that] includes intelligence to sense the load on each of the operating servers and task[s] the servers according to ...predetermined rules or policy to serve data or content ...[T]he intelligent load balancer and router are operative to sense which of the servers are in active mode and to route server tasking to those active server modules according to some policy....⁸

Furthermore, Fung teaches reduction of a voltage and clock frequency for the CPU if the utilization for that server drops below a threshold utilization:

On the other hand, while operating in the 1st mode, if the agent detects the CPU utilization for that server module drops below a lower threshold (for example a threshold of about 50%) for a fixed period of time, it will send a policy violation signal to the global master. The global master will command the server to enter the 2nd mode wherein power consumption is reduced relative to the 1st mode, such as by reducing the CPU clock frequency, lowering the CPU operating voltage, and preferably both lowering the CPU clock frequency and the CPU core voltage to match the switching speed requirements imposed by the clock frequency. This task may also alternatively be performed by the local CPU.⁹

However, Fung does not teach or describe the following limitations of claim 36:

...a global link control coupled with the forwarding logic to transmit a control signal to the ports, the control signal being indicative of at least one characteristic of the data transmission, to configure link circuits of the ports based upon the at least one characteristic via local link controls of the ports.

Thus, Applicant respectfully requests that claim 36 be allowed. Furthermore, as dependents of claim 36, claims 37-41 incorporate the limitations of claim 36. Thus, Fung does not teach all the limitations of dependent claims 37-41 and Applicant respectfully argues that claims 37-41 should be allowed.

Claims 18 and 20 stand rejected under 35 USC § 102(e) as being anticipated by Bui U.S. Pat. 7,047,428 (hereinafter “Bui”). With regards to claim 18, Bui does not describe, expressly or inherently, all of the limitations of claim 18.

Amended independent claim 18 states:

⁸ Fung, pp. 9-10, par. 86,

⁹ Fung, pg. 16, par. 156,

18. A method for reducing power consumption by multiple links between an origin and a destination of a data transmission, the method comprising:
determining an activity for the multiple links based upon forwarding logic, the activity being related to a characteristic for the data transmission via a channel of the multiple links;
associating the activity with a power mode for the multiple links, wherein the power mode is related to the characteristic; and
communicating the power mode to the multiple links to configure circuitry associated with the multiple links to process the data transmission.

The Office action states:

Regarding claims 18, Bui discloses a method for reducing power consumption by a link, the method comprising: determining an activity for the link based upon forwarding logic, the activity being related to a characteristic for a data transmission via a channel of the link (see Figs. 3-4 and col. 7, line 54 - cl. 8, line 56); associating the activity with a power mode for the link, wherein the power mode is related to the characteristic (see Figs. 3-4 and col. 7, line 54 - cl. 8, line 56); and configuring circuitry associated with the link to operate in the power mode to process the data transmission (see Figs. 3-4 and col. 7, line 54 - col. 8, line 56).

As cited in the Office action, Bui describes an integrated circuit that detects when a mode of operation is not being used and puts the associated logic of the integrated circuit to sleep:

When integrated circuit 300 detects that one mode of operation is not being used, it proceeds to put the logic associated with that transceiver to sleep as shown at 402. This may mean decoupling or disconnecting the 10BASE-T functionality, the 100BASE-T functionality or the 1000BASE-T functionality....¹⁰

However, Bui does not teach or describe:

...determining an activity for the multiple links ..., the activity being related to a characteristic for a data transmission via a channel of the multiple links ...and communicating the power mode to the multiple links to configure circuitry associated with the multiple links....¹¹

Thus, Applicant respectfully requests that the rejection of amended claim 18 be withdrawn and that amended claim 18 be allowed. Furthermore, as dependents of claim 18, claims 19-24 incorporate the limitations of claim 18. Thus, Bui does not teach all the limitations

¹⁰ Bui, col. 8, lines 13-21.

¹¹ Claim 12.

of dependent claims 19-24 and Applicant respectfully argues that these rejections should be withdrawn and claims 19-24 should be allowed.

Claim rejections under 35 USC § 103(a)

The Office action further rejected claims 6, 8-9, 19, and 22 under 35 USC § 103(a) as being unpatentable over Bui. Claims 7, 11, and 22 stand rejected under 35 USC § 103(a) as being unpatentable over Mills. Claims 5, 11, 15, and 17 stand rejected under 35 USC § 103(a) as being unpatentable over Fung. Claims 21 and 23-24 stand rejected under 35 USC § 103(a) as being unpatentable over Bui in view of Fung.

To establish a prima facie case of obviousness, three basic criteria must be met.¹² First, there must be a suggestion or motivation to modify or combine the references.¹³ Second, there must be a reasonable expectation of success in the modification or combination.¹⁴ Finally, the modification or combination must teach or suggest all of Applicants' claim limitations.¹⁵

In accordance with the claim amendments, claims 19-24 and new claims 26-35 and 37-41 are dependent upon amended independent claims 18, 25, and 36. Applicant respectfully traverses the rejections of the independent claims, showing that the independent claims are not anticipated by Mills, Fung, or Bui as discussed above. Because the 35 USC § 103(a) rejections are predicated upon anticipation of amended claims 18, 25, and 36, Applicant believes that these rejections are also traversed. Thus, Applicant respectfully requests that the rejection of claims 19-24 be withdrawn and that claims 18-41 be allowed.

¹² Manual of Patent Examining Procedure §2142.

¹³ *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

¹⁴ *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097, 231 USPQ 375, 379 (Fed. Cir. 1986).

¹⁵ *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

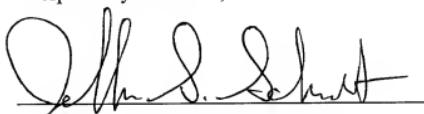
CONCLUSION

Applicant respectfully responds to the objections and traverses the cited references with regards to the claim rejections under 35 USC §§ 102 and 103. Accordingly, Applicant believes that this response constitutes a complete response to each of the issues raised in the Office action. In light of the amendments made herein and the accompanying remarks, Applicant believes that the pending claims are in condition for allowance. Thus, Applicant requests that the rejections be withdrawn, pending claims be allowed, and application advance toward issuance. If the Examiner does not believe that the claims are in condition for allowance or would like to discuss the basis for the drawing amendments in further detail, the undersigned attorney requests a telephone conference at (512) 288-6635.

A petition and payment for an extension of time is attached. No other fees are believed due with this paper. However, if any fee is determined to be required, the Office is authorized to charge Deposit Account 50-0563 for any such required fee.

March 14, 2007
Date

Respectfully submitted,



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